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VETERINARY SCIENCE ABROAD.

This week we publish an article upon veterinary education in Russia which will be a revelation to many readers. The well-known general backwardness of education in Russia has probably led many to infer the existence of a similar state of things there as regards veterinary science; and the article will correct this view. The details it gives of the schools, the curriculum, and the examination for the premier Russian veterinary degree, all suggest that the veterinary education of Russia will compare favourably with that of any country in Europe. In addition, it gives information of research institutes, veterinary journals, and veterinary associations, indicating a healthy and vigorous professional activity. From a veterinary point of view, the Russians are certainly a nation worth knowing; and, though the linguistic difficulty will always be a stumbling block, it is one which may be at least partially surmounted.

The article suggests an application wider than its subject. Our contributor remarks "very little is known in this country of the work of veterinary surgeons in Russia, and it is probable that the Russians know as little of us." Undoubtedly this is true as regards Russia; but of how many other countries as well? The same thing could be said with quite equal truth of Sweden—another country in which veterinary science stands high. It could be said—in some cases again with equal truth, in others very nearly so—of many other countries in which veterinary science flourishes. Broadly speaking, veterinary surgeons of all countries are lamentably indifferent to the work of their colleagues of other nations; and perhaps none are more open to reproach in this respect than ourselves.

All English members know something—not enough—of the work of those two great veterinary countries, Germany and France. Most of them know a little of that wonderful little country—Denmark, if only from the superb contributions of a few individual Danes; and most are aware of the great veterinary advances made in this generation by the United States. But, outside these countries, there is much for us to learn. Italy, Hungary, Holland, Switzerland, Rumania, Spain, and the Argentine by no means exhaust the list of countries in which veterinary work worth following is being done. Probably the veterinarians of those countries know little of our work; but that does not alter the fact that we ought to know more of theirs. Some countries—especially France, Russia, and Italy, all of high veterinary standing—will generally draw much closer to us after the war than ever before, We must see that our profession plays its part in the process.

WHEAT—HUMAN OR ANIMAL FOOD.

Very rarely does a Veterinary Association undertake the discussion of a subject so difficult, and at the same time of such supreme national importance, as that now under consideration by the Central Society. It is a question regarding which our profession may fairly be expected to advise; but we ought to face the fact, and acknowledge that it is one which many of us have never studied. How well it deserves study is well brought out by the Central Society's discussion, which illustrates its many-sidedness, and its importance alike; and it was a good move to adjourn the discussion. A great deal more might be said at the next meeting, if the right men are there to say it.

At present, of course, the question comes before us mainly as a war problem, and is further complicated by the abnormal conditions of supply and of labour caused by the war. In that form it calls for immediate answer; but even now it foreshadows still wider questions that will arise after the war. With all its evil results, the world-war has already had the good one of reminding the nations of their ultimate dependence upon agriculture; and no nation stood in more need of the reminder than we did. The expansion of our commerce and manufactures, and the unhindered importing facilities we have enjoyed for so long, had led us to a deplorable neglect of our agriculture, which the public may, perhaps, now recognise. We may hope that the first few years of peace will see a revival and development of British agriculture upon a scale hitherto unprecedented; and our profession must be ready to assist in it.

NOTES ON GLANDERS AND MALLEIN.

The following notes from an old diary covering a period of some two-and-a-half months, during which time I was working exclusively on glanders, may prove of interest.

Sept. 23rd. Received orders to deal with glanders under the Indian Glanders and Farcy Act, within the limits of a municipality where the disease was suspected to be very prevalent.

Dec. 25th to Jan. 3rd. Obtain evidence of the existence of the disease in the shape of two live ponies found straying showing clinical symptoms. Also make post-mortem examinations on two other ponies found dead, one of which contained typical glanders lesions. Decide to test all the ponies in a certain area. Occupy some days in making necessary arrangements.

Jan. 4th. Inject 19 ponies with mallein—ten in one stable, six in a stable adjoining, and three caught straying.

Jan. 5th. Examine and take temperatures of the ponies under the test. Definite reaction appeared in eight of the ten; in four of the six; in all of the three.

The reactions were most pronounced, and the high percentage was alarming, as there was evidence that a large number of stables might be affected. Had a busy day making arrangements for disinfection of stables and for temporary accommodation for healthy ponies.

Jan. 6th. Destroy the 15 affected ponies, make post-mortem examinations on five, all of which revealed characteristic glanders lesions. Bury the carcases in lime.

Jan. 6th to 25th. 193 ponies were tested: 45 reacted definitely and were destroyed; post-mortem examinations were made on 28 of these, and the existence of the disease in all 28 confirmed. Fifteen gave doubtful reactions, and were isolated in a new temporary stable to await a further test. In addition ten clinical cases, most of which were caught straying, were destroyed.

During this period the work was carried on under difficulties, in an atmosphere of distrust, suspicion, and opposition on the part of the pony owners, Opposition finally developed in such a serious form that operations had to be suspended from Jan. 26th till Feb. 6th.

The whole matter really turned on the question of compensation. Eventually it was decided to pay fair compensation, and arrangemants were made for prompt valuation of and payments for condemned ponies. The result was that the work was able to proceed smoothly and rapidly, and became as pleasant as such work can be in a tropical climate.

Feb. 6th to March 14th. Over 900 ponies were tested.

Out of a total of 1127 ponies tested with mallein:	
Reacted definitely and were destroyed	291
Died while under the test	1
Gave doubtful reactions (14 of which were re-tested, 8 reacting were destroyed)	61
Destroyed without re-testing on clinical evidence alone	31

The remaining doubtful reactors were not re-tested by me, as on the 16th of March I left, on transfer to other work in another Province, and the work passed into other hands.

Post-mortem examinations were made on 104 of the ponies destroyed. Typical glanders lesions were found in all but three cases. One of these three had a nodule in the spleen, and another an abscess in one lung, which may have been due to glanders bacilli. I had no time and no facilities to carry out any laboratory tests. In the third case nothing was found at all resembling a glanders lesion.

The following notes in connection with the work appear to me to be of interest:—

1. The work was carried out under the Indian Glanders and Farcy Act, which, so far as I remember, is very similar in its provisions to the British Act. The fact that no provision in the Act for compensation, was the cause of my early troubles in dealing with the disease. Under present conditions in the Indian Empire I do not think it will ever be possible to deal with glanders by means of mallein on any considerable scale, without payment of compensation. I believe in most of the Provinces of India, where glanders is prevalent and serious attempts are being made to deal with it, local arrangements to provide for compensation have been made, as had to be done in this case.

2. The provisions of the Act as regards disinfection are very drastic; providing—in addition to the usual flushings and washings with disinfectants—for the burning of floors if of wood, the burning of all harness, clothing, etc., the planeing and singeing of all other wood work. If the whole stable is made of "cheap materials" difficult to disinfect, the whole must be burnt. Stables, after disinfection, must remain empty for 60 days. Many of the stables with which I was concerned were double-storeyed, split bamboo and thatch erections, the ponies living below, the owner and his family above. They were quite impossible to disinfect, and certainly came under the description of "built of cheap materials."

Disinfection of any sort is generally particularly distasteful to the Indian people. The carrying out of provisions like the above amongst an ignorant and excitable people cannot be done peacefully unless compensation is provided. I remember at the time it was remarked that "tact" was required. I found in practice that it certainly did require a good deal of that quality, if one was to shoot a man's horses, burn down his stables and residence, and remain on good terms with him. That the keeping of stables empty for a lengthy period involved hardship, especially in the case of poor owners, dependent for their entire livelihood on their ponies, was recognised, and temporary accommodation was provided. This fact helped a good deal to ease the situation, and was an additional advantage in that it enabled me to keep some control over ponies after testing, and to keep all doubtful reactors effectively isolated.

3. *Method of work.* Mallein was used (always subcutaneously) three times a week. Ponies in a certain area, having had their temperatures taken, been described and numbered, were injected with mallein on Mondays, Wednesdays, and Fridays, in the afternoon.

Inspections were made and temperatures were taken next day at the 16th and 24th hour. Ponies definitely reacting, after being valued, were taken away and destroyed as soon as possible, often on the evening of the second day.

A number of ponies almost always had to be kept under observation till the 3rd and sometimes till the 4th day, as a certain percentage developed delayed local reactions. These ponies at the 16th and 24th hours, usually showed some temperature reaction, but had no local swelling. Later, at the 36th or 48th hour, a very typical local swelling would develop. Careful post-mortem examina-

tions were always made on these cases, and they were invariably severely affected, My experience tended to show that a delayed local reaction to mallein is diagnostic of glanders.

4. *Disposal of Carcases* was at first something of a difficulty; the local incinerator was only capable of accommodating one carcase at a time, and took about two days to dispose of that. As I often had over 20, and on one occasion over 30 carcases to dispose of in one evening, it was not of much use to me, and not being quite satisfied to leave everything to the vulture (the chief conservancy agent in the East) I had to fall back on burying in lime. I found the most satisfactory method of dealing with a large number of carcases, was to dig a wide, deep trench; animals to be destroyed were led up to the edge, shot, and, post-mortem examinations having been made, were rolled in.

When all were in, and hides had been slashed, etc., the digging of the trench was continued, the earth dug out being thrown on to the dead animals. I always allowed for a covering of at least 6 feet of earth over the topmost carcase.

5. Before payment of adequate compensation was provided, various devices were tried, with the object of making reactions to the mallein test. Attempts were made to reduce temperatures by giving large quantities of cold water; also, I think, by febrifuges. Reduction of the local swelling was attempted by hand rubbing and fomentations. Attempts to deal with the local swelling tended to defeat their own object, the swelling sometimes became diffuse, and not perhaps so readily noticeable to the eye as if it had been left alone, but it became exceedingly sensitive to the touch.

6. As is usual, I suppose, in such cases, some attempts were made to exploit the payment of compensation dishonestly. The attempts which came to my notice were not very serious, nor difficult to detect. Sometimes incurably lame or otherwise worthless horses in good condition were included among batches of ponies to be tested, to which they did not properly belong. It was hoped, I presumed, that the horses would react and that their good condition would deceive the valuers into placing a high value on them. (For various reasons, I personally arranged to have nothing to do with the valuing). There may also have been some transactions in horses suspected to be glandered, the horses passing to persons entitled to receive compensation from persons not so entitled. But even if a few such cases did occur, the loss and annoyance caused by the frauds is much more than compensated by the absence of subterfuges with the object of concealing the disease, and by that absence of opposition generally which soon results from the payment of adequate compensation.

In this case the basis on which payments were made was 2/3rds of the full value of the animal previous to the test. No payments were made on animals showing clinical symptoms of the disease, although, in my opinion, from the point of view of stamping out the disease—at any rate in the East, it would pay well to do so. Most of the clinical cases destroyed by me were animals caught straying. It was never possible to obtain reliable evidence as to their ownership, where they came from, nor what new foci of the disease they might have set up while loose. They were, of course, quite worthless, but the payment of a small sum—either in form of compensation or as a reward for producing them, would have facilitated their early elimination, and with them the most potent factor in the farther dissemination of the disease,

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ABSTRACTS FROM FOREIGN JOURNALS.

The Normal and Pathological Digestion of the Dog.

In *Die Zeitschrift für physiologische Chemie* of November 5, 1912, Prof. London published an account of fourteen investigations upon this subject undertaken by his pupils. At the time of publication the researches were still being continued; and the following is a short *resumé* of London's 1912 article. The name of each worker is indicated as his research is described.

Riujosch made a study of normal gastric digestion in a dog with a gastric fistula. This showed that meat, whether ingested alone or accompanied by water in the quantity of from 200 c.c. to 400 c.c., always provokes the same gastric secretion, and the gastric juice contains the same proportion of acid. If the quantity of water is much greater (600 c.c. to 800 c.c.) the quantity of gastric juice augments slightly, and the acidity diminishes. On the other hand, if certain different substances (gliadin, casein, elastin and fibrin, and powdered meat) were given in the same physical state (35 grammes of powder with 20 c.c, of water) a considerable difference in the activity of the stomach was observed.

Mepisson investigated the digestion of varied foods according to the order in which they were ingested. He found that, in an alimentation composed of meat and bread, the meat disappeared more quickly from the stomach if it was introduced with the bread, and more slowly if introduced after it. If introduced before milk was given, it disappeared more slowly than if introduced afterwards.

Stasoux studied the digestion of a mixed diet. He found that, if bread soaked in milk is given to a dog, different substances pass out of the stomach at different moments. Lactose passes first, casein afterwards, then fat, and the bread last.

Mazijewski studied the gastric evacuation of starch, and found that this process presents three periods: (1) a rapid evacuation which lasts from two to three hours; a period of repose which lasts from one to two hours, and during which no evacuation is observed; and (3) a new period of rapid evacuation.

Dagaew studied the influence of the intestine upon gastric evacuation, and found it to be considerable. If hydrochloric acid is introduced into

the intestine, gastric evacuation is impeded. This action is exercised upon both the cardiac and pyloric portions of the stomach, but much more intensely upon the latter.

Mazijewski found that resection of the pylorus exercises an evident action upon gastric evacuation. Gastric evacuation is maintained as in the normal animal, but it appears much more rapidly, In a normal animal, after the ingestion of 600 grammes of milk, the liquid appears in the fistula after seven minutes; while it appears in two minutes in an animal with its pylorus resected. In the latter case, the milk is not coagulated.

Babrilowitsch studied the function of the fundus in the evacuation of liquids. He found that, where the stomach is reduced to the fundus, the gastric evacuation of water goes on in the habitual manner, but, in the absence of the pylorus, the separation of liquid from solid material is effected badly.

Krym investigated the influence which the pancreatic juice exercises upon gastric digestion. He found that the inactive juice, introduced into the stomach, does not modify stomachal digestion, and that the active juice slightly augments digestion. If the meat, before its introduction, has been for some time in contact with pancreatic juice, the stomachal digestion is considerably accelerated.

Holmberg carried out new investigations upon digestion and absorption after the exclusion of the pancreatic juice. He found that, in the first period following the resection of the pancreas, the gastric activity is increased. The stomach nevertheless partly digests the fat of the yolk of egg; but this action is much exalted if pancreatic juice is introduced into the stomach. In the de-pancreated dog the degradation of proteid substances is much less profound; the starch reaches the ileum without having undergone any modification; soluble starch and lactose comport themselves as in the normal animal. The fat of the yolk of egg is much less digested than in the normal condition. Added to the food, pancreatic juice restores the digestion and absorption of proteids and carbo-hydrates to the normal, and notably improves the digestion and absorption of fats.

Stassow carried out some new studies upon the gastric digestion of a mixture of bread and milk in dogs in which different parts of the digestive tube had been resected. In consequence of resection of the small intestine from 50 centimetres below the duodeno-spinal flexure to 50 centimetres above the cæcum, he observed an augmentation of gastric secretion. The acidity of the juice augmented considerably; and at the same time evacuation of the stomach was much retarded and digestion was prolonged for two hours beyond the normal. In consequence of resection of the duodenum (leaving a passage for the flow of the gastric juice and the bile) there was a diminution of digestion and of absorption, especially with regard to fats and starch; in the inferior part of the ileum, however, digestion continued to be normal. The absence of the duodenum was partially compensated by the large intestine. Resection of the large intestine, practised after that of the duodenum, determined a diminution of weight and an abundant expulsion of fats and of nitrogen by the fæces; these phenomena were not produced when resection of the large intestine followed that of the ileum. The large intestine may, therefore, in certain pathological cases, discharge a compensatory function.

Wiedeman investigated the effects upon the digestion caused by disturbances of the biliary secretion. He found that resection of the gall bladder has no influence upon digestion, for the absence of the gall bladder is compensated by the widening of the biliary canals. In order to estimate the influence of the bile, it was made to flow into the small intestine very low down, and what occurred above and what occurred below its points of entrance was studied. The digestion of Proteids and of Carbohydrates went on normally in the absence of bile; the addition of fat diminished digestion and absorption successively. In the part of the intestine without bile, the fat, whether emulsified or not, was digested less; the non-emulsified fat was not absorbed at all, and the emulsified fat was very little absorbed (17 per cent).

Builleis studied the effect upon digestion of extirpation of the great and of the small epiploon, and of the mesentery. He found that resection of the great and of the small epiploon provokes no nutrition disorders. Resection of the mesentery resisted investigation, for the animal refused food or vomited.

Solowjew studied nutrition in cases of insufficient digestion. He attempted, either by addition of digestive juices or by addition of previously digested products, to compensate the disorders which result from the resection of certain portions of the digestive tube. In a dog without a stomach, he found that the substances best absorbed were the products of the intestinal digestion of meat; moreover, the proteid substances of the alimentation were absorbed better if yolk of egg were added to them. The addition of gastric juice or of pancreatic juice had no effect. In a dog without a pancreas, the addition of products of gastric digestion to the food determined a retention of nitrogen; and the addition of trypsin or of trypsinogen restored the excretion of nitrogen by the faeces to the normal. In a dog with the intestine resected, the addition of the digested products diminished the urinary excretion of nitrogen; and an analogous result was obtained by the addition of inactive pancreatic juice. The addition of intestinal juice gave no result.

Krym experimented upon alimentation by jejunotomy. He found that the organism utilised substances introduced by a fistula of the jejunum rather badly. A mixture of meat and starch was very little utilised. A mixture of meat and milk was tolerated better. A mixture of meat, milk and eggs was utilised comparatively well. Yolk of egg provoked an intense secretion of the digestive juices, milk a lesser secretion, and meat produced no secretion.

(*Revista de Higiene y Sanidad Veterinaria*).

W. R. C.

VETERINARY EDUCATION IN RUSSIA.

Russia is notoriously backward in matters of education, but it is important not to allow this generalisation to hide the fact that in many branches of education Russia is well to the front.

With regard to the mass of the people, and to general elementary education, the generalisation is true, for 79 per cent. of the inhabitants are illiterate. There are only about 100,000 elementary schools, with just over six million pupils, a smaller number than is in attendance at primary schools in this country, though the population of Russia is about four times that of the British Isles. On the other hand, there are ten Universities with about 40,000 students in attendance. In medicine and in Eastern studies Russia takes a high place, and in the higher education of women she is second to none. Conditions as to elementary education was said to be improving as a result of the Elementary Education Act of 1912, but it is to be feared that the war has considerably set back progress in this direction.

In addition to the ordinary Secondary Schools, there are special High Schools for Engineering, Roads and Bridges, Electro-technics, Agriculture, Law, Art, Mechanics, Chemistry, Veterinary Science, etc., and it has recently been decided to make a considerable increase in the number of technical schools.

Education in Veterinary Science is given in four High Schools, and the course of instruction lasts over a period of four years after matriculation. Each year is divided into two terms, and as the Diploma is not awarded in any case until the ninth term, it means that the minimum time required for obtaining the Diploma is four and a half years.

The Course of Study is as follows :—

1st year. Chemistry, Organic and Inorganic ; Physics, Botany ; Zootomy ; Pharmacognosy ; Pharmacy.
Practical : Dissections.

2nd year. Medical Chemistry ; Agriculture ; Comp. Anatomy and Embryology ; Mineralogy ; Physiology ; Pharmacology ; Conformation.
Practical : Dissections, Pharmacy, Histology.

3rd year. Surgery ; Principles of Shoeing and Diseases of Hoof ; General Pathology and Bacteriology ; Prescribing ; Meadow Culture Hygiene ; Special Pathology and Pathological Anatomy.
Practical (in groups) : Histology, Forge Work, Clinic, Bacteriology.

4th year. Special Pathology and Therapy ; Pathological Anatomy ; Operative Surgery ; Breeding ; General Therapy ; Obstetrics ; Epizootiology ; Veterinary Police ; Meat Inspection.
Practical (in groups) : Clinic, Ophthalmoscopy, Operative Surgery.

The above course is followed at each of the four High Schools—at Dorpat, Kharkov, Kazan, and Warsaw.

The following particulars of these schools may be of interest :—

1. Dorpat (Jurjev), in Livonia, a University town of about 43,000 inhabitants, on the railway from Revel to Riga. This, the oldest Veterinary Institute in Russia, was established in 1847, and before the war had about 350 matriculated students. There are ordinary Professors in : (1) Pathology, Anatomy, and Meat Inspection ; (2) Bacteriology, Epidemiology, and Veterinary State Medicine (Prof. Dr. Karl Happich, a member of the Permanent Committee for the International Veterinary Congresses) ; (3) General Therapy and Operative Surgery. Extraordinary Professors in (1) Special Pathology and Therapeutics ; (2) Agricultural Botany, Hygiene, Breeding ; (3) General Pathology, and (4) Physics. The Director is Ludvig Kundsin, Ordinary Professor of Zoology and Comparative Anatomy. There is a library of 27,000 volumes.

2. Kharkov, in "Little Russia," population 178,000, on the railway from Moscow south to the Crimea. Also a University town, and one of the most progressive in South Russia. The Veterinary Institute, founded in 1873, now has about 500 students. There are Ordinary Professors in (1) Histology ; (2) Physiology and Physiological Chemistry ; (3) Operations and Shoeing ; (4) Zootomy ; (5) Infectious Dieseases. Extraordinary Professors in (1) Breeding and Hygiene ; (2) Bacteriology and Meat Inspection ; (3) Special Pathology ; (4) Jurisprudence ; (5) Pathological Anatomy. Lecturers in Surgery and Diseases of the Eye, Bacteriology and Embryology, with nine other teachers and fourteen assistants. There is a library of 22,000 volumes. The Director is Prof. G. O. Gumilevski.

3. Kazan, a river port and University town on the Volga and Capital of the Government of Kazan. Population 132,000. The Veterinary Institute, established in 1874, has about 400 students, and in the Army School attached there are 33 students. There are Ordinary Professors in (1) Special Pathology ; (2) Surgery, Ophthalmology, Obstetrics ; (3) Breeding and Agriculture ; (4) Pathological Anatomy, Normal and Pathological Histology. Extraordinary Professors in (1) General Pathology and Meat Inspection ; (2) Bacteriology and Epizootiology ; (3) Pharmacognosy and Pharmacy, with the help of five University Professors for Physics, Botany, Medicinal Chemistry, and General Chemistry ; eleven teachers, three clinical assistants, six demonstrators, two laboratory assistants, and one shoeing-smith. Library 14,000 volumes. The Director is Prof. K. M. Holzmann.

4. Warsaw, now occupied by the Germans, has a Veterinary Institute with six lecturers, ten teachers and twelve assistants.

The highest scientific Degree granted in Veterinary Science in "Master of Veterinary Science." This is open to graduates, who must submit evidence of having been in practice for at least one year since graduating. Candidates are subjected to a theoretical examination in all special subjects, in which questions on a higher standard than the final year's examination are put, especially in relation to the literature of the different branches of Veterinary Science. After passing this general theoretical examination, there is a special written test in which two questions must be answered. A thesis must also be submitted, which, after acceptance, must be defended by the candidate in public. The thesis is usually published in one of the veterinary journals, in the case of a successful candidate.

There are in Russia many important institutions for Veterinary Research, among which may be included the Imperial Institute of Experimental Medicine at Petrograd, with its ten departments and two special laboratories. The Director of the Department of Epizootiology is Dr. Alex. A. Wladimiroff. At Petrograd is also a Veterinary Bacteriological Laboratory under the Ministry of Home Affairs, of which Dr. W. L. Yakimoff is Chief of the Hæmoparasitological Bureau. There is a station for the preparation of anti-cattle plague serum at Chita, in the Trans-Baikal province of Eastern Siberia, on the Siberian Railway. This town is the trading centre on the routes from Bargazin and the Chinese frontier to the Amur. There is another similar station at Zurnabat fn the Government of Elisabethpol in Transcaucasia, the Director of which is Dr. J. Luhs. In the Volga-Don Region an anti-Glanders Bacteriological Station is carried at Stanitsa Veliko-Kniajeskaia.

Important cities and municipalities have a separate veterinary department under the Municipal Council (Gorodskaia Duma), *e.g.*, Petrograd, Moscow, Kiev, Kharkov, Riga, Vilna, Warsaw, Odessa. There are also

Provincial veterinary departments in 63 Provinces or "Governments," covering practically the whole of Russia. The importance of State Veterinary Medicine in a country so largely agricultural, is evidently not lost sight of.

Veterinary surgeons have not neglected the advantages to be gained from mutual intercourse, and in a country where, until recently, the meeting together of groups of people was sternly repressed, it is interesting to find that there are at least twenty-one Veterinary Associations, having headquarters in the following towns:—Moscow, Kharkov, Kasan, Astrakan, Tambovsk, Vladikavkas, Uralsk. Orenburg, Blagoveschensk, Kiev, Omsk, Smolensk, Ekaterinoslav, Ekaterinodar, Kursk, Odessa, Orel, Warsaw, Petrograd, Stavropol.

Russia is fairly well off in the matter of Veterinary Periodicals, as the following list will show:—

Published at Petrograd: "Archiv Veternarnich Nauk" (Archives of Veterinary Science); "Trudy Russkavo Veterinarnavo Obshchestva" (Transactions of the Russian Veterinary Society); "Vestnik Obshchestvennoe Veterinarnie" (Chronicle of Public Veterinary Medicine); "Veterinarnaia Biblioteka," "Veterinarni Feldscher" (The Veterinarian); "Veterinarnaia Vratch" (The Veterinary Doctor).

Published at Moscow; "Veterinarnoe Obozrenie" (Veterinary Review); "Veterinarnaia Gizn" (Veterinary Life); "Veterinär Feldscher Zeitschrift."

Published at Warsaw: "Veterinarnii Sbornik" (Review of Veterinary Medicine).

At Lemberg (Lwow): "Przeglad Weterynarski."

The Veterinary Institutes at Kharkov and Kazan issue periodical Memoirs, and at Dorpat is published the "Zeitschrift fur wissen. und prak. Veterinarmedizin" (Journal of Scientific and Practical Veterinary Medicine).

Very little is known in this country of the work of veterinary surgeons in Russia, and it is probable that the Russians know as little of us. It is to be hoped that after the war this state of things will be remedied, and that means will be found to bring the two countries into closer touch. The language is no doubt the great barrier which hinders mutual intercourse. In this connection it is interesting to note that the Russian Academy of Science has recently elected a special Bureau whose aim it is to promote intellectual intercourse between Russia and England. It will publish in English and Russian the work of modern scientists, and will organise lectures to be given in England by Russian Professors, but it is not likely that Veterinary Science will benefit much by this scheme.

Ticks and Louping-ill.

The following appeared in *The Glasgow Herald* of November 24th:—

"For some years the veterinary staff of the Board of Agriculture and Fisheries, financed for this purpose it is understood by special grants from the Development Commission Fund, have been conducting extensive investigations on sheep diseases, notably louping-ill, or trembling, and an interesting paper on the subject has recently been communicated by the chief veterinary officer of the Board, Sir Stewart Stockman, to the 'Journal of Comparative Pathology and Therapeutics.' Meantime the point that is specially dealt with in the present communication is 'the important question in relation to the etiology and epizootiology of the disease—the tick theory': the suggestion is that ticks play some part in producing the disease. The terms louping-ill and trembling are found to be somewhat loose in their application, and animals said by farmers or shepherds to be suffering from the disease may in life show many different nervous symptoms, and post mortem different lesions, macroscopic and microscopic, sufficient to account for these symptoms, but nothing so characteristic as infallibly to indicate a specific ailment.

In selecting animals for experiment Sir Stewart Stockman adopted as a working definition that the diseased animals should come within a special category which he describes thus:—(*a*) They came from farms notoriously affected with louping-ill. (*b*) They had been suddenly attacked by a non-febrile or feebly febrile disease characterised by symptoms of stupor or nervous excitability, followed quickly by paralysis of the fore or hind extremities, or both. (*c*) The disease had appeared in what is recognised as the louping-ill season. (*d*) On post-mortem examination no macroscopic or microscopic lesions of any recognised disease which could account for the symptoms were present. (*e*) In the internal organs (bowels excepted) of animals slaughtered at the point of death, or in those examined immediately after death, no micro-organisms were discoverable by microscopic examination, and none were cultivated from them by the ordinary methods of the laboratory.

It may at once be observed that this basis of selection appears to be too narrow, and that on two grounds. In the first place it fails to include what is commonly regarded as the most typical form of louping-ill—where the animal on receiving a sudden start leaps off the ground and falls dead, evidently of a very acute disease associated with heart failure. And, secondly, the selection takes in cases, one might say, not of the real disease itself but merely of its sequelæ. To take a parallel instance, it is well known that diphtheritic paralysis occurs as a sequela in only a small percentage of diphtheria cases, and it would be as fair to restrict an investigation of diphtheria to this small proportion of cases as it is to confine the louping-ill inquiry merely to animals showing what are really after-effects of the disease rather than symptoms of the disease itself.

The methods adopted to test the tick theory were:—(*a*) Exposure of muzzled sheep on infected pasture; (*b*) inoculation with emulsions made from ticks off affected animals; (*c*) testing the infectivity of broods of ticks in their various stages, the mother ticks having engorged on sheep affected with louping-ill; (*d*) testing ticks which in their previous stage had fed on affected sheep; (*e*) testing in their succeeding stage ticks which in their previous stage had engorged on cases of chronic louping-ill.

As regards (*a*), the method was, briefly, to bring on to an infected pasture a number of sheep from a farm on which louping-ill was unknown. Some of the sheep were muzzled while running on the grass, and the others were left unmuzzled. The muzzled animals were removed every evening to a shed with a wooden floor, where they were fed upon crushed oats and hay obtained from a farm upon which louping-ill did not exist. All the sheep were free from ticks when put on the pasture. In a later modification of the experiment a third lot of sheep were run unmuzzled on the same pasture, but were removed every five days and dipped in an arsenical bath, with the object of observing the effect on ticks and on the disease of dipping sheep at short intervals. In the result all the sheep became heavily infected with ticks, and it was found that cases of the disease occurred alike in the unmuzzled, the muzzled, and the dipped lot. Sir Stewart Stockman is of opinion that it does not seem possible to draw from the results firm conclusions in relation to the tick theory.

On the whole series of experiments the conclusion is drawn that the evidence so far 'is against the view that louping-ill is a disease carried by ticks.' But Sir Stewart Stockman, with what will probably appear to be an excess of caution, is of opinion that two cases still require investigation: (*a*) the possibility of ticks

acquiring infection when sucking as larvæ, remaining non-infective in the nymphal stage and developing infectivity when adults; and (*b*) the influence of gross infestation. Both cases would appear to be already included in the experiments actually discussed, and as regards the latter it may be pointed out that one tick, provided it is infected, is sufficient to cause any of the known tick-borne diseases. In any event, if the criticism passed above is justified, the results to be obtained by additional experiments on the same lines do not seem likely to carry our knowledge of the causation of the disease much further.

A more fruitful line of inquiry would appear to be the determination of whether the disease of louping-ill does or does not occur on land where there are no ticks, for if this were established—and there is some evidence at least of its occurrence—it would finally settle the tick controversy.

The following paragraphs are from a letter by Mr. Peter Reid, of Maxwell Park, Glasgow, in *The Scottish Farmer* of Dec. 9th, commenting on the foregoing. The chief point in his letter is the strong suggestion that infection is in the grazing—the land becomes "sick": but that the causal agent is yet to seek.

"Many facts point to the conclusion that the real source of infection of both louping-ill and braxy is to be found in the pastures. How else could a wire fence separate a healthy from a deadly farm? Or what reason can be given for a death rate of 5 and 6 per score from braxy among hoggs wintered in Cowal, while on the other side of the Clyde the disease is almost unknown? A number of cases have come under my own observation where the death rate was much lower on land which had been clear of sheep for some years than on adjoining land where sheep had been grazed continuously. On one farm where hoggs were sent to winter, 5 per score died before the end of November, and the survivors were then removed. No hoggs were wintered on the farm for two years thereafter, and in the third year a few hoggs were wintered, with the result that no deaths from braxy occurred.

"The co-operation of flockmasters throughout the country is absolutely essential if the best results, with the least expenditure, are to be obtained. Numerous experiments might be made at little cost, and the results tabulated, *e.g.*:—Portions of selected "deadly" farms throughout the country might be temporarily fenced off and treated in different ways; then the death rate on these portions compared with the death rate on the rest of the farm. In the meantime farmers and shepherds should treat all sheep suffering from any trouble as if it were of an infectious nature, and treat the carcases of all sheep as if the cause of death had been an infectious disease. These precautions could do no harm, and would probably do much good.

"When sheep superseded crofters, the sheep farmers made fortunes, and there was no word then of great fatality among introduced sheep. The death rate on some of these farms in course of years became so great that sheep had to be cleared off and cattle put on. Is there not strong presumptive evidence here that the land had become infested with disease germs."

PARLIAMENTARY.

In the House of Commons, on Tuesday, Dec. 19.

The Slaughter of Young Pigs.

Sir R. Winfrey, replying to Sir C. Kinloch-Cooke (Devonport, U.), said:—The Board of Agriculture are aware of the tendency to slaughter young pigs and sows on account of the high prices of foodstuffs. I am glad to say, however, that the somewhat hasty action reported to have been taken in this respect by some farmers is by no means general. I hope that any such tendency will be checked when the arrangements foreshadowed by my predecessor have been completed and are in full working.

SUBSCRIPTIONS TO R.C.V.S.

The Secretary of the Royal College of Veterinary Surgeons begs to acknowledge the receipt of the following subscriptions:—

H. J. Axe, Col. A.V.C.	£1	1	0
J. Campbell, Swinford, Mayo	1	1	0
W. B. Edwards, Lt.-Col. A.V.C. (1916-17)	2	2	0
Previously acknowledged	841	17	6
This total includes £12 12s. to be carried forward to 1917 account.	£846	1	6

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
	Out-breaks (*a*)	Animals.	Out-breaks (*a*)	Animals.	Out-breaks (*b*)	Animals.	Out-breaks (*b*)	Animals.	(*b*)	Out-breaks (*a*)	Slaughtered. *
Gt. BRITAIN.											
Week ended Dec. 23	15	24					37	63	37	49	26
Corresponding week in 1915	9	9					54	92	19	81	248
Corresponding week in 1914	12	21							8	58	199
Corresponding week in 1913	19	25			7	40	48	89	12	53	347
Total for 52 weeks, 1916	552	665	1	24	47	117	2107	4582	382	4288	9145
Corresponding period in 1915	575	641	56	702	49	85	‡933	‡1995	257	3994	16702
Corresponding period in 1914	722	796	27	166	97	286	1530	2642	226	4356	39277
Corresponding period in 1913	594	652	2	73	162	438	2382	4647	235	2573	23034

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.

(*a*) Confirmed. (*b*) Reported by Local Authorities. † Counties affected, animals attacked:—

Board of Agriculture and Fisheries, Dec. 26, 1916 Excluding outbreaks in army horses.

Royal Agricultural Society of England,
16 Bedford Square, London, W.C.
December 21st, 1916.

WAR EMERGENCY COMMITTEE'S SUGGESTIONS.

Mr. R. PROTHERO, President of the Board of Agriculture, attended the first meeting of the War Emergency Committee of the Royal Agricultural Society of England, under the Chairmanship of Mr. Adeane. He outlined the Government's proposals for increasing the production of food, and after his departure the Committee passed the following resolutions which are being forwarded to the Board of Agriculture :—

1. That this Committee is of opinion that a price should not be fixed for any agricultural produce unless the cost of production is taken into consideration and unless the price of feeding stuffs, fertilisers, etc., is also fixed.

The Committee questions the wisdom of fixing prices, but in the event of the price of wheat being fixed at 60/- per quarter, the opinion of the Committee is that the price of oats should be fixed at not less than 40/- per quarter.

2. The Committee is of opinion that where Spring sowing of wheat is undertaken care should be taken to ensure that the varieties used should be especially suitable for the purpose—such as Red Marvel, April Bearded, or, in districts where it is known to succeed, Red Fife.

3. The Committee feel that the land of this country cannot be made to produce more food unless there be an increase in the supply and use of artificial manures.

The manufacture of these manures is dependent upon a larger amount of sulphuric acid being made available for the use of the makers of artificial manures, and the Committee urge the Government to set free for the use of those manufacturers such acid as they may require.

4. The Committee are of opinion that in view of the great difficulty experienced in obtaining artificial manures in this country, the Government be requested to prohibit the export of sulphate of ammonia and basic slag, except to our Colonies, until the requirements of agriculturists of this country have been met.

5. This Committee views with the gravest apprehension any proposal to send for sale in England horses cast from the Army in France. They are of opinion that it would be a most unwise proceeding to import these horses, having regard to the grave risk of introducing and spreading disease.

This Committee requests the President of the Board of Agriculture to safeguard the farmers' interests in this matter, both now and at the end of the war.

Personal.

The Highways Committee of the Barnes District Council recommended that Mr. T. L. WRIGHT, M.R.C.V.S., of 1 Castlenau, Barnes, be appointed, as from Sept. 30th last, to act as veterinary surgeon to the Council.—The recommendation was approved.

Field-Marshal von Hindenburg has had the diploma of honorary veterinary surgeon conferred upon him by the Hanover Veterinary Institute.

The Central Veterinary Society.

A General Meeting of the Society will be held at 10 Red Lion Square, W.C., on Thursday, January 4th, at 7 o'clock. Adjourned discussion: "Is it more profitable to grow grain for the public consumption, or for the feeding of stock?" By G. H. Livesey, Esq. Cases of interest. HUGH A. MACCORMACK, Hon. Sec.

ARMY VETERINARY SERVICE.

Extracts from *London Gazette*,

WAR OFFICE, WHITEHALL, Dec. 23.

HONOURS AND REWARDS.

The King has been graciously pleased to approve the following Honours and Rewards, for distinguished service in the Field in Mesopotamia, with effect from June 3, 1916, inclusive :—

To be Brevet Lieut.-Colonels :—Maj. (temp. Lieut.-Col.) W. S. Antony, Army Vety. Corps ; Maj. W. A. Wood, Army Vety. Corps.

REGULAR FORCES. ARMY VETERINARY CORPS.

Temp. Lts. to be temp. Capts. :—A. W. Allen (Dec. 1); W. S. Walker, L. G. Gryspeerdt (Dec. 11) ; P. Haugh (Dec. 12).

Temp. Lieut. B. Whittam relinquishes his commn. on account of ill-health contracted on active service (Dec. 24).

Temp. Qrmr. and Hon. Lieut. W. G. Thornton, from A.S.C., to be temp. Qrmr. (Dec. 24).

Dec. 27.

Temp. Lieut. to be temp. Capt. :—A. J. S. Reynolds (Dec. 12).

Temp. Lieut. D. M. Ireland relinquishes his commn. on term. of contract (Nov. 29).

To be temp. Qrmr. with the hon. rank of Lt. :—W. F. S. Standen (Dec. 18).

Dec. 28.

To be temp. Lieut. :—I. E. Croken (Nov. 13).

SPECIAL RESERVE OF OFFICERS.

Dec. 28.

Lieut. to be Capt. :—M. R. Lawson (Sept. 7).

BILLETING RATE FOR HORSES.

An Army Order issued on 21st inst. increases the rate of 2s. a day payable for billeting horses with stable room and forage to 2s. 4d. a day as from December 1, both for keepers of victualling houses and for other occupiers.

The A.V.C. Comforts Fund.

Dear Sir,—I shall be glad if you can kindly find place in this week's *Veterinary Record* for the enclosed lists of further subscriptions and gifts received for benefit of A.V.C. Comforts Fund, since my previous list published Dec. 2nd.

In reference to the particulars published in that letter of the number of vests and oilskin coats sent out to France for the A.V.C. men specially exposed, I have received an offer from a subscriber, who has already sent in very generous cheques and parcels for benefit of the Fund, that he will be pleased to contribute another £5 if twelve other subscribers will do the same, to make up a sum of money sufficient to pay for a further consignment of these coats and warm vests, which are so much needed by the men in wet weather. I hope this appeal will meet with a ready response, and that I may know soon if such further kind subscriptions can be expected. It takes several weeks for these coats to come from the manufacturers, then be despatched to France, and finally distributed.

Yours truly, ADELAIDE M. MOORE.

Strathyre, Parsifal Road, Hampstead, N.W.
Dec. 19th.

Subscriptions received since list published Dec. 2nd.

Alfred West (F.)	£2	2	0
North of Ireland Veterinary Society, per Col. C. Rutherford	5	5	0
James B. Manuel	1	1	0
W. L. Cockburn	2	2	0
J. McKinna	1	1	0
R. C. Trigger (F.)	3	3	0
Students, Royal (Dick) Vety. College, per Dr. Bradley	1	10	0
Mrs. Macase		2	6
Mrs. Dale, Coventry	1	1	0
Capt. D. Marshall	2	2	0
Mr. & Mrs. Foreman, per Mrs. J. Willett	2	2	0
per Mrs. H. Taylor: proceeds "Flower Day," Morpeth	20	0	0
Mrs. Jackson, Errol	1	0	0
W. Jackson Young, Ayr	1	1	0

Parcels received since Dec. 2nd.

Mrs. Shipley, Mrs. Harrison, Mrs. Baird, Mrs. Rutherford, Mrs. Southern, Mrs. Alison Brown, Mrs. Garnett, Mrs. Cullen, Mrs. Leckie. Mrs. Kirby, Mrs. J. O. Anderson, Mrs. Barr; and parcels of socks knitted with wool supplied: Mrs. Mackenzie (Penicuik) Mrs. Cowan (Penicuik).

Sir,—Since forwarding my list for publication in this week's *Veterinary Record* I have received a further most generous contribution of £26 from Mrs. John Ferguson, Silversprings, Templepatrick, Co. Antrim (forwarded through Mr. Ewing Johnston, Belfast, and Mrs. Rutherford) for benefit of the Army Veterinary Corps Comforts Fund, with the request that this sum should be specially devoted to the supplying of extra comforts to the veterinary units attached to the Ulster Division in France.

I should like to take this opportunity, through your columns, to thank Mr. Ferguson, Mr. Ewing Johnston, and the many kind and generous friends in the North of Ireland, who have so repeatedly shown their interest in the Veterinary Corps and the work of the Comforts Fund. I can assure them that their efforts are warmly appreciated by the officers, N.C.Os. and men on active service. I would also like to acknowledge the kind help of those ladies in and around Belfast who are arranging for the knitting of one thousand pairs of socks, which I hope to have ready early in the new year to send out to our men.

I remain yours truly,

ADELAIDE M. MOORE.

Suspected Foot-and-Mouth Disease in Yorks.

The Board of Agriculture and Fisheries announce that the existence of foot-and-mouth disease among animals on premises at Balne, Yorks, W.R. (between Doncaster and Selby), has been confirmed. The usual precautions have been taken to prevent the spread of disease from the premises and an Order has been made prohibiting the movement of animals in a large area surrounding the premises.

As disease exists in an animal recently bought in York from an Irish dealer, the Board have as a precautionary measure made an Order prohibiting the holding of markets or sales within, and the movement of animals out of, an area comprising the geographical counties of Northumberland, Cumberland, Westmoreland, Durham, Cheshire, Lancashire, York, Derby, Nottingham, Lincoln, Rutland, and Stafford (except the petty sessional divisions of Rushall, Bilston, Kingswinford and Wordsley, and Wolverhampton).

The Board, as a further measure of precaution, pending further information as to the previous history of the above-mentioned animal, have made an Order allowing the landing of animals from Ireland only on condition that they are slaughtered within the landing places for Irish animals.

A Doncaster correspondent states that the outbreak was discovered during the week end on a farm near Balne, in the Snaith district. So far only one beast is known to have been affected and this was at once slaughtered. It was brought from the York market on Saturday the 16th, and as it formed part of the stock of an itinerant Irish dealer, and as the cattle from the York market have since been distributed through other markets, the strictest precautions are necessary to localize any further cases that may arise. On Monday the police were informed of a suspected case in the Doncaster area, and a veterinary surgeon was sent to make an examination, with the result that the animal concerned was found to be free from disease. The origin of the case at Balne is unknown, no outbreak having occurred in Northern England since the Royal Show week of 1912, and no case has been reported in Ireland recently.

Inquiries at the veterinary branch of the Department of Agriculture in Dublin on 26th inst showed that up to the present the reports from inspectors have been satisfactory and that no trace of foot-and-mouth disease has been discovered. An examination of some animals supposed to have been in contact with the cattle purchased in York from a dealer in Irish stock showed that none of them was affected with the disease.

The Department of Agriculture has also issued an Order prohibiting from to-day the movement to Ireland from any part of Great Britain of hay and straw except manufactured straw used for packing merchandise or hay or straw certified by a competent military authority to be required for exclusively military purposes.

It was officially announced on Wednesday by the President of the Irish Department of Agriculture that the Board of Agriculture had informed him that it had been decided that the disease discovered on premises at Balne, Yorkshire, was not foot-and-mouth disease, that all restrictions imposed by the Board's recent orders were being withdrawn forthwith, and that animals might be shipped from Ireland as before.—*The Times.*

Glasgow Veterinary College

(INCORPORATED).

The Board of Governors met within the Chambers of the Secretary, Mr. Alexander Russell, writer, 105 St. Vincent Street, Glasgow, on Wednesday, 13th inst. There was a large attendance—Sir Hugh Shaw Stewart, Bart., C.B., the chairman of the Board, presided.

The Secretary reported the death of Mr. Horatio R. B. Peile, one of the Governors of the College. On the motion of Mr. Alex. Cross of Knockdon, it was agreed to record in the minutes the Governors' sense of the loss which the College had sustained through the death of Mr. Peile.

The severe losses to the national sheep stock from the diseases of braxy, louping-ill, etc., were again under consideration, and the secretary was instructed to write to the Secretary of the Board of Agriculture for Scotland that the Governors were glad to know that the Board were desirous, on the the re-constitution of the Food Production Committees, of disseminating information among farmers which would help to prevent these diseases, and hoped that the Board would prepare leaflets containing the salient points and issue them to the Food Production Committee for distribution amongst farmers.

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